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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER HARPER, LEON JONATHAN				
ART UNIT		PAPER NUMBER		
2166				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/817,161

Applicant(s)

WEISSMAN ET AL.

Examiner

LEON HARPER

Art Unit

2166

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-29 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Response to Amendment

1. The amendment filed on 7/24/2009 has been entered. Claims 27-29 have been added. No claims have been amended or canceled. Accordingly, claims 1-29 are pending in this office action.

Allowable Subject Matter

Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-10, 12-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 20050071345 (hereinafter Lin) in view of US 2002 0174128 (hereinafter Govind)

As for claim 1 Lin discloses: defining a multi-tenant data structure having a plurality of data columns and one or more index columns; defining a first data field for a first tenant, said first field having a first data type (See paragraph 0028); defining a second data field for a second tenant, said second field having a second data type, wherein the second data type may be different than said first data type (See paragraph 0028); and when records having data values in the first and second fields are created by the first and second tenants, storing the data values of first and second fields to a single column in the data structure, (See paragraph 0031).

Lin does not disclose: wherein the single column includes data values that may include different data types for different tenants. Govind however does disclose: wherein the single column includes data values that may include different data types for different tenants (See paragraph 0084). It would have been obvious to an artisan of ordinary skill in the pertinent art at the time the invention was made to have incorporated the teaching of Govind into the system of Lin. The modification would have been obvious because the two references are concerned with the solution to problem of data processing, therefore there is an implicit motivation to combine these references. In other words, the ordinary skilled artisan, during his/her quest for a solution to the cited

problem, would look to the cited references at the time the invention was made. Consequently, the ordinary skilled artisan would have been motivated to combine the cited references since Govind teaching would enable user's of the Lin system to store information from the different users in user defined data types (See Govind paragraph 0064).

As for claim 2 the rejection of claim 1 is incorporated and further Lin discloses: defining a separate data structure having one or more columns; and in response to an indication from one of the first tenant and the second tenant that data in the first data field or second data field, respectively, be unique, copying the data values stored in the single data column corresponding to the first data field or second data field, respectively, to a column in the separate data structure. (See paragraph 0037)

As for claim 3 the rejection of claim 1 is incorporated and further Govind discloses: copying to a first one of the index columns the data values stored in the single data column for the first field in response to a request from the first tenant to index data in the first data field (See paragraph 0065).

As for claim 4 the rejection of claim 1 is incorporated and further Lin discloses: wherein the copying includes converting the copied data values to a modified format (See paragraph 0071)

As for claim 5 Lin discloses: defining a first table for a first tenant, said first table having a first data field, and said first tenant having a first tenant id; assigning a first table id to the first table (See paragraph 0028); defining a second table for a second tenant, said second table having a second data field, and said second tenant having a second tenant id; assigning a second table id to the second table (See paragraph 0033); wherein when records are created for the first table by the first tenant, for each created record: a) storing the value of the first data field to a single data column in the data structure (See paragraph 0036); b) storing the first tenant id in the organization id column; and c) storing the first table id to the primary key column; and wherein when records are created for the second table by the second tenant, for each created record (See paragraphs 0049-0051, 0056): a) storing the value of the second data field to said single data column in the data structure; b) storing the second tenant id in the organization id column; and c) storing the second table id to the primary key column; and wherein the first and second tables of the first and second tenants are stored in the data structure. (See paragraph 0026)

Lin does not disclose: defining a multi-tenant data structure having a primary key column, an organization id column and a plurality of data columns; Govind does disclose defining a multi-tenant data structure having a primary key column, an organization id column and a plurality of data columns (See paragraph 0045). It would have been obvious to an artisan of ordinary skill in the pertinent art at the time the invention was made to have incorporated the teaching of Govind into the system of Lin. The

modification would have been obvious because the two references are concerned with the solution to problem of data processing, therefore there is an implicit motivation to combine these references. In other words, the ordinary skilled artisan, during his/her quest for a solution to the cited problem, would look to the cited references at the time the invention was made. Consequently, the ordinary skilled artisan would have been motivated to combine the cited references since Govind teaching would enable user's of the Lin system to store information from the different users in user defined data types (See Govind paragraph 0064).

As for claim 6 the rejection of claim 1 is incorporated and further Govind discloses: copying to a first one of the index columns the data values stored in the single data column for the first table in response to a request from the first tenant to index data in the first data field (See paragraph 0065).

As for claim 7 the rejection of claim 1 is incorporated and further Lin discloses: identifying the data values to be copied based on the first tenant id, the first table id and the first data field (See paragraph 0037).

As for claim 8 the rejection of claim 1 is incorporated and further Govind discloses: wherein said first data field has a first data type, and wherein said second data field has a second data type different from the first data type, such that said single

data column includes data values having said first and second data types. (See paragraph 0045).

Claim 9 is a computer-implemented method substantially corresponding to the method of claim 5 and is thus rejected for the same reasons as set forth in the rejection of claim 9.

As for claim 10 the rejection of claim 9 is incorporated and further Govind discloses: defining a third table for a second tenant, said third table having a third data field, said third data field having a third data type, and said second tenant having a second tenant id; and assigning a third table id to the third table (See paragraphs 0084-0086) ; wherein when records are created for the third table, for each created record (See paragraphs 0105-0109): While Lin discloses: storing the value of the third data field to said single data column in the data structure; storing the second tenant id in the organization id column; and storing the third table id to the primary key column (See figure 1) ; wherein the first, second and third tables are stored in the data structure, and wherein said single data column includes data values having said first and second data types and said third data type (See paragraph 0029-0030).

As for claim 11 the rejection of claim 9 is incorporated and further Lin discloses: wherein the first and second table ids are different (See paragraph 0031).

As for claim 13 the rejection of claim 9 is incorporated and further Govind discloses: copying to a first one of the index columns the data values stored in the single data column for the first table in response to a request from the first tenant to index data in the first data field (See paragraph 0065).

As for claim 14 the rejection of claim 9 is incorporated and further Lin discloses: wherein copying includes converting the copied data values to a modified format (See paragraph 0032).

As for claim 15 the rejection of claim 9 is incorporated and further Govind discloses: wherein converting includes applying a case folding algorithm to the data values (See paragraph 0064)

As for claim 16 the rejection of claim 9 is incorporated and further Lin discloses: wherein said third data type is selected from the group consisting of said first data type, said second data type and a data type different from the first and second data types (See paragraph 0030)

As for claim 17 the rejection of claim 9 is incorporated and further Govind discloses: wherein when the first tenant creates a record for the first table, executing a process that determines whether the data value in the first data field for that record

satisfies a threshold criteria, and if so, processing an action rule (See paragraphs 0088-0090)

As for claim 18 the rejection of claim 9 is incorporated and further Govind discloses: wherein the action rule indicates a recipient of a notification, the method further including automatically sending a notification message to the recipient (See paragraph 0118)

As for claim 19 the rejection of claim 9 is incorporated and further Lin discloses: defining an owner field for the first data table, wherein each data value stored in the owner field indicates an hierarchical user access level for the associated record (See paragraph 0093).

Claims 20-23 are computer readable medium, database system claims substantially corresponding to claims 1 and 5 and are thus rejected for the same reasons as set forth in the rejection of claims 1 and 5.

As for claim 24 the rejection of claim 1 is incorporated and further Lin discloses: wherein the multi-tenant data structure comprises a relational database data structure (See paragraph 0005)

As for claim 25 the rejection of claim 4 is incorporated and further Govind discloses: wherein the converting includes applying a case folding algorithm to the data values (See paragraph 0064)

As for claim 26 the rejection of claim 4 is incorporated and further Govind discloses: wherein the modified format comprises a common data type corresponding to the index column. (See paragraph 0070)

As for claim 27 the rejection of claim 1 is incorporated and further Lin discloses: wherein the first data type and the second data type are data types that are native to the data structure (See paragraphs 0026, 0028).

As for claim 28, the rejection of claim 5 is incorporated and further Lin wherein the first data field has a first data type, wherein the second data field has a second data type, wherein the first data type and the second data type are data types that are native to the data structure (See paragraphs 0026, 0029) .

As for claim 29 the rejection of claim 9 is incorporated and further Lin discloses: wherein the first data type and the second data type are data types that are native to the data structure (See paragraphs 0026, 0029).

Response to Arguments

Applicant's arguments filed 7/24/2009 have been fully considered but they are not persuasive.

Applicant argues:

The Examiner states in the Office Action that Lin does not disclose "storing the data values of first and second fields to a single column in the data structure," and cites to Govind at ¶84 address this claim element. However, Govind also fails to teach this claim element. While Govind teaches how a user can create multiple custom fields in a single data structure, Govind does not teach or suggest, and in fact teaches away from, multiple custom fields that exist in a single column. Govind at ¶84 discloses that a user may register a new data type with a database, including the name, attributes, and pickling/unpickling routines for the new data type. However, this passage of Govind does not disclose that any pair of new data types (or existing data types) can be combined in a single column of a data structure. Govind goes on to state that the use of "Raw" columns is not ideal because "consequently, the database system would not be able to detect situations in which one user erroneously stores data from one kind of user-defined data type in a RAW column that is supposed to hold data from a different kind of user-defined data type." [Emphasis Added] (¶49) Thus, Govind clearly teaches away from combining two different data types in a single data column because this could result in the corruption of data within a "Raw" field.

Examiner responds:

Examiner is not persuaded. Initially examiner notes that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case it is the custom attribute teaching combined with handling of foreign data types which result in making claims obvious. Moreover the "Test of obviousness is not whether features of secondary reference may be bodily incorporated into primary reference's structure, nor whether claimed invention is expressly suggested in any one or all of references; rather, test is what combined teachings of references would have suggested to those of ordinary skill in art." *In re Keller*, Terry, and Davies, 208 USPQ 871 (CCPA 1981).

Applicant argues:

The Examiner cites ¶40 of Lin in the Office Action as disclosing the specific features of claim 3. However, this paragraph only discusses how data is copied between tables when an application sitting on top of the data repository is upgraded. In fact, Lin states in related ¶35 that "techniques are provided for upgrading an application without losing previously-made user-customizations to the data repository that is used by the application...the data for the custom attributes stored in these tables is not overwritten or lost during an upgrade." ¶40 further describes aspects of this functionality. It is clear that ¶40 has nothing to do with the ability of the system to allow a tenant to index custom data fields to improve system performance. The problem

addressed by ¶40 of Lin concerns the ability of Lin to preserve existing custom fields when the database structure itself is being upgraded. The creation of an index allows for improved performance of a database while maintaining the same basic underlying structure. There generally are not any concerns about losing data when creating an index in a database, and so ¶40 does nothing to teach or suggest the creation of database indexes on custom fields. Furthermore, a database key is not the same thing as a user-defined index. A key, as is commonly used in the art, refers to a data value that can uniquely identify a given record. As one example, an "ID" can be given to each record in a table, and if the ID is unique for each record, then the ID is a key. An index is a user-defined optimization of a database, and an indexed data field has no requirement that each value of the data field uniquely identify a record.

Examiner responds:

Examiner is not persuaded. Initially examiner notes that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case Govind does disclose indexing (See paragraph 0065). Moreover the "Test of obviousness is not whether features of secondary reference may be bodily incorporated into primary reference's structure, nor whether claimed invention is expressly suggested in any one or all of references; rather, test is what combined teachings of references would have suggested to those of ordinary skill in art." *In re Keller*, Terry, and Davies, 208 USPQ 871 (CCPA 1981).

Applicant argues:

Custom attributes, on their own, in no way implement any features of a multi-tenant data structure. Custom attributes, as disclosed by Lin, are in no way organized so that attributes for one tenant can be kept separate from other tenants. For example, referring to Fig. 3 of Lin, any user with access to any of the custom attribute tables would be able to access every record associated with every custom attribute in the table. Lin discloses no way to distinguish between records of one tenant from the records of another tenant. According to one aspect of the Applicant's invention, even when tenants do have access to the same table (or even the same columns within a given table), they do not have access to other tenants' data. In one disclosed embodiment, this is accomplished using "Org id" and "acc id" fields. (see, e.g., Figs. 3, 5, and 7) One tenant with access to a given table will only be able to access records that belong to that tenant. This will be the case even if data from other tenants reside in the same table or even the same column. Lin simply does not disclose or suggest this fundamental aspect of multi-tenant functionality.

Examiner responds:

Examiner is not persuaded. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. Interpretation of Claims-Broadest Reasonable Interpretation: During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during

prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In *re* Prater, 162 USPQ 541,550-51 (CCPA 1969). In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. explicitly keeping separate tenants) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON HARPER whose telephone number is (571)272-0759. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LJH
Leon J. Harper
November 5, 2009

/Isaac M. Woo/
Primary Examiner, Art Unit 2166